

STANDARDS AND PROCEDURES		ARIZONA DEPARTMENT OF ADMINISTRATION	INFORMATION SERVICES DIVISION
Section: 01	Title: Operations		
Sub Section: 07	Title: LIBRARIAN 4.3		
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1. STANDARD

1.1. Summary of Standard Changes

1.2. Purpose

- 1.2.1. The purpose of the Standards and Procedures regarding the Librarian software application is to assure that the product is used by the DOA Data Center personnel to house all COBOL source code for all application systems.

1.3. Scope

- 1.3.1. Initial development of a COBOL program is to take place within the Librarian environment. When the programs are ready to be moved into the live production environment, the source code will be migrated by operations into the appropriate Librarian production master file.

1.4. Responsibilities

1.5. Definitions and Abbreviations

1.6. Description of Standard

- 1.6.1. Librarian's two main components are the Change Control Facility (CCF) and the Extended Librarian Interactive Productivity Services (ELIPS). Other components include File Access Interface Routines (FAIR), Librarian Access Method (LAM), and Comparator II. If you desire detail information on a particular product or process, please refer to the appropriate CA Librarian manual.
- 1.6.2. The CA/Librarian is an interactive dialog based application that provides users with the ability to track, control, and maintain program source code in both test and production environments. At the Data Center we also utilize the Librarian concept of a Quality Assurance (QAS) environment. This idea provides at least one intermediary step between test and the final production environment. A sample of a simple Librarian promotion chain would be:

TEST --->QAS --->PROD

A more likely configuration however, would be:

TEST --->PL QAS - -->Ops QAS --->PROD

(where PL QAS is the application project leaders' library and
Ops QAS is the operations control group responsible for
promoting programs into the production libraries)

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1.6.3. CCF is the product that controls the movement of source and load modules between these environments. CCF also performs record keeping tasks by tracking the location of modules throughout the application Librarian chain.

1.7. Implications

1.7.1. Before you can do any processing in Librarian, an application library chain must be established. You must also submit an e-mail request (form DOADC-138) that will define you as a user and the application for which you are to be connected. The chain creates a logical promotion relationship between the Production, Test, Q/A, and Reject libraries for the specific application.

1.7.2. Requests received other than via e-mail and on the proper form will be rejected.

1.8. References

1.9. Attachments

2. LIBRARIAN PROCEDURES

2.1. Summary of Procedure Changes

2.2. Procedure Details

2.2.1. The basic procedure is as follows:

2.2.1.1. An application user submits a change request via CCF. The manager of the application then reviews the request and either assigns it to a programmer defined for that manager or closes the request. The assigned programmer then reviews the request and logs out the appropriate source modules from the production environment into the test environment. After making the required changes, the programmer logs in the module to the first QAS library, project leader QAS. The project leader then reviews the request and makes any desired testing.

2.2.1.2. The PL then logs the source module into the operations control library and submits a module movement request to operations. Upon receipt of the move request, Operations will then schedule the move into the production environment where it will be automatically compiled and linked. If the control group finds that the program is not ready for promotion, they can reject the login request back into the test library.

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2.2.2. Change Control Procedures

2.2.2.1. Opening a Change Request

No module can be processed without a change request and valid work order number. To create a request you must sign on to TSO and take the option for Librarian. Once you are at the Librarian menu, you should select the change control facility option. The CCF menu will be displayed. Select option 1.

Open a Change Request. You must fill in all fields on the panel and you must specify the proper application name. The application name is used by the Librarian to assign the request to a predefined manager. If a change request is not created you will be unable to logout or login source modules. Work order/change request numbers are assigned by the Librarian software and are identified by the format WOnnnnnn. A work order can be assigned to only one manager or manager group.

2.2.2.2. Assigning a Change Request

Only the manager of the application, usually the project leader, can assign a change request to a programmer. To assign a request, the PL must sign onto SO and access the Librarian CCF Main Menu. He or she must then select option 2, *Assign a Change Request*, and fill in the necessary fields. No one can work with a source module unless they have a valid change request work order number assigned to their user id. A manager can assign a request to any programmer that is connected to the manager. A change request can only be assigned to single programmer.

2.2.2.3. Reassigning a Change Request

A manager can reassign a change request to a different programmer by entering the *Assign Change Request* option. When the assign panel is displayed, the manager must type the command "REASSIGN" at the command line. A reassignment panel will now be displayed. Enter the user id of the person currently assigned and then the id of the new recipient. A manager can only reassign a work order to a programmer who is assigned to that manager. If you need to reassign a request to a person outside of the manager's group, you must submit a request to the Librarian administrator according to the following guidelines.

You must send e-mail form DOADC-144, to the manager of the programmer for whom you wish to reassign the request. The manager must then forward the request to the Librarian administrator for processing. If the request does not come from the reassigned manager, it will NOT be processed.

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2.2.2.4. **Displaying Assigned Change Requests**

Any user defined to Librarian can view requests assigned to their user-id. Access the Librarian CCF Main Menu and select option 3. A panel showing each request assigned to your user id will be displayed. Press [ENTER] to display additional requests.

2.2.2.5. **Logout a Module to Test**

A valid change request/work order number must exist and must be assigned to your user-id. From the Librarian CCF main menu select option 4. Enter the required data, including meaningful history text and language type (see note below). When finished, the module will be immediately moved to the application test library. A module can not be logged out by more than one person at a time (except for the application emergency id). New programs MUST be logged out using the logout function even though they do not exist. CCF will mark them as new source and allow normal processing.

Note: As Librarian uses the logout language type to identify the proper compilation skeleton to use during login, we strongly advise that you enter a correct language type during logout. Failure to do so may result in compilation failures when moving into production. Changes to the module language type can be performed by submitting a written request, via e-mail, to the Librarian administrator or by the programmer during the login process.

2.2.2.6. **Login a Module to the PL QAS Library**

A valid change request must exist and the module must have been logged out under the control of the request. Access the CCF main menu and select option 5 to login a module. Select the module that you want to have moved and place a "P" in the field to the left of the module name. Once you process a module it is immediately removed from the test library and placed in the PL Q/A library. Some application chain configurations also perform an autocompile into the test load libraries upon promotion into the PL library. Check with your PL or the Librarian administrator with regards to your specific application. Once in the Q/A library the module cannot be updated or deleted. If you need to change the language type assigned during the logout process, you can place an "H" instead of "P" next to the module name. A history panel for the marked module will be displayed. You will have the option to change the language type as well as the program description.

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2.2.2.7. **Q/A Module Login to Production - Rejection to Test**

After the programmer has logged the source module into the Q/A Library, the project leader may either reject the login or promote the login to the operations library. If further changes to the module are required, the login request must be rejected. Rejection will cause the module to be placed back into the test library so that additional work can be completed. To access the promotion/ rejection panel, select option 9 from the CCF main menu. A list of modules will be presented, select the module to be processed and place either a "P" to process the module and move it into the operations library, or "R" to reject the module back to the test environment.

2.2.2.8. **Closing the Change Request**

Only when all modules for a change request have been successfully logged into the production library can a change request be closed. To close a change request you must sign on to the CCF main menu and select option 7. The close panel will be displayed, enter the work order number that you want to close and press enter. A series of panels will be displayed prompting you for input on the request. Once a request is closed it can not be reopened.

2.2.2.9. **12XX.5 Compiling Source Code**

Programs will be automatically compiled and link edited by the Librarian facility using the JCL that is appropriate for the language type given at logout. Once again, we strongly advise that the proper language type be used at logout in order to prevent possible compilation errors.

2.2.2.10. **Compiling Source Programs in the Test Library**

The programmer is responsible for compiling and testing his/her program in the test environment.

2.2.2.11. **Sample Compilation JCL**

The following JCL skeletons may be used as a foundation for your test compile JCL.

Method 1: Using the Librarian Compilation file:

```
//jobname JOB(Account,Room),'Programmer Name',CLASS,MSG CLASS,NOTIFY
//*****
/* Instruct Librarian as to which module to select, *
/* The module is then added to the &&TEMP dataset *
//*****
//STEP1 EXEC LIBRPROC,COND=(0,NE)
```


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```
//SYSPRINT DD SYSOUT=*
//MASTER DD DSN='Your source library dsn',DISP=SHR
//OSJOB DD DSN=&&TEMP,DISP=(,PASS),SPACE=(CYL,(1,1),RLSE),
//      DCB=(DSORG=PS,BLKSIZE=3200,LRECL=80,RECFM=FB),
//      UNIT=WORK
//SYSIN DD *
-OPT
-COM This is a comment card.
-COM The following SEL card selects the desired module to be
-COM placed in the temp file.
-EXTRACT module name,options< See Batch ref. for options
-END
//*****
/*Insert compile and Link Edit JCL below. You must use *
/*the &&TEMP dataset above as the name of your * /*SYSIN dataset name.
*****
```

METHOD 2: Using SUBSYS=LAM

```
/*      JOBCARD DATA
/*      Call to the compiler
//SYSIN DD DSN=Your.Librarian.SRCLIB,SUBSYS=LAM,DISP=SHR
//SYSLIB DD DSN=Your.Librarian.COPYLIB,SUBSYS=LAM,DISP=SHR
/*
/*      Remaining JCL cards for compile and link
```

Note: The rule to Method 2 is, if you want to access a Librarian library from a non-librarian program, you must use SUBSYS=LAM. Also, if you are concatenating datasets and one of the datasets is a Librarian format file, all DD cards in the concat list must have SUBSYS=LAM otherwise you will receive a concatenation conflict error.

2.2.2.12. Compilation Parameters

ALL SQL and COBOL OPTION parameters MUST be stored in the application system's PARMLIB. Any special options, other than the standard options defined for your system, MUST be coded in the individual application program.

*NOTE: You MUST promote the PARMLIB members to production, via JSF, prior to the promotion of ANY COBOL programs.

2.2.2.13. Using AMODE/RMODE LKED Options with the "VL" Language Types

If you need to have your program module compiled as AMODE=31 you may use the Librarian language types that begin with the designation "VL"

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(Variable /Customized Link Edit) or you can use the language types ending with "31."

The "VL" languages are to be used by the application groups when they have the need to code link edit parameters other than the defaults. The parameters must be defined as a member in the application's parmlib and must have the same name as the module to be customized.

The "xxxxxx31" languages are to be used when you only want 31 bit addressing and no additional Link Edit Parameters. The language type of "31" does not require the creation of a PARMLIB member.

In order for the Linkage Editor to function properly when reading your parameters, the parmlib must have a BLKSIZE to Record Length ratio of no greater than 40:1. Example: a record length of 80 can have a BLKSIZE no larger than 3200. Below is a sample of a customized link edit member. If you desire additional information on the linkage editor options, consult the IBM MVS Linkage Editor and Loader User's Guide.

```
ENTRY module-name    ** Define the load Main Entry Point
MODE AMODE(31),RMODE(ANY) ** Assigns 31 bit addressability
ALIAS name1, name2 ** Defines multiple Entry Points for the load module
INCLUDE ddname(member-name) ** Include additional input for the link
NAME module-name(R) * Names the load module and replaces it in the
                      requested load library
```

2.2.2.14. 12XX.6 EMERGENCY PROCEDURES

Production Emergency Program Repair

The Librarian emergency chain **MUST** be used under any of the following circumstances.

1. When the need to correct a production failure of a program that is already logged out for maintenance.
2. When the test structure is different than the production structure.

2.2.2.15. The Librarian Emergency Chain and User Id

Each Librarian application will have an emergency chain defined to support the production system. Access to the emergency chain is restricted by an emergency user id (contact your project leader for the id for your application). The emergency user id will have full authority under Librarian, this means that this id will be able to create a change request, assign the request (must assign to the emergency id as no other id has access to the emergency chain), modify the program, and log the module back into production, at which time the emergency id **WILL BE** revoked. Extreme

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care should be exercised when using the emergency id as it will allow a module to be logged out multiple times.

2.2.2.16. **Activating the Emergency User Id**

When operations calls the person responsible for maintaining the failed production job, that person must then immediately request that the emergency id be resumed. Failure to do so will result in the programmer having to personally appear at Operations and present proof of identity before the id can be resumed.

WARNING: Due to the high degree of authority that the emergency id exercises, it is imperative that the id only be used for production emergencies.

2.2.2.17. **12XX.7 Program Naming Conventions**

The first three characters of all Cobol Programs and CICS Maps must be the System Id that the programs are associated with. If unsure of your System Id, please contact Quality Assurance.

2.2.2.18. **Librarian Dataset Naming Conventions**

All datasets must be created by Librarian and must adhere to the following naming template:

DSN=wxxP.yyy.LIBRtyp.zzzzzzzz

Where:

w =Standard \$, @, or # to identify production, staging, or test
xx = Agency Identifier Code. (see Data Center Standards manual Section 1202.03)

P = Standard for a PDS

yyy = Application identification characters

LIBR = Identifies the Dataset as a Librarian master file dataset

typ = Must be one of the following librarian types:

EMR = Emergency Master File

HST = Production History Master

OPR = Operations Master File

PRD = Production Master File

QAS = Quality Assurance Master

STG = Staging Master File

TST = Test Master File

zzzzzzzz = Library descriptor. Must be one of the predefined qualifiers outlined in the DOA Data Center Operating Manual in Section 1202.04. (Ex. JCLLIB, SRCLIB etc.)

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2.2.2.19. **12XX.8 Backup and Restore**

The Librarian System Master file, which controls the change request and promotion process, will be 'backed up' on a nightly basis. Backups of individual production application master libraries, as well as application test libraries will take place nightly.

2.2.2.20. **12XX.9 Cobol Renumbering Problems**

Cobol renumbering should NOT be done within Librarian for the following reasons.

First and foremost, a Cobol renumbering process will cause each and every line within a module to be considered a changed line by Librarian, whether or not the actual Cobol line number was changed. This means that instead of just a few Cobol lines where code was changed being saved as part of an archive level, every line within the module will be saved as part of an archive level.

Thus, a Cobol renumbering may very well mask a few Cobol code changes with many non-code changes. This masking of a few Cobol code changes continues even as a module is logged back into Production.

While it would be 'no sweat' to obtain the previous module, identifying the few actual code changes, however, may be nearly impossible within Librarian, and defeating a major reason for module archiving.

Secondly, disk space usage will be greatly increased for a module where Cobol renumbering has occurred. Each module and all of its archive levels must fit within 255 'blocks' of disk space. A module where Cobol renumbering has occurred has archive levels just as large as the module itself. Hence, a module where Cobol renumbering has occurred will much sooner receive an 'Out of Space' message while saving it. Here the 'Out of Space' does not refer to the Librarian Dataset, but to the module itself. Once a module cannot be saved because of 'Out of Space', archive levels will need to be released (deleted) in order to obtain needed space.

In short, do NOT perform a Cobol renumber within Librarian.

2.2.2.21. **12XX.10 LIBRARIAN PROCESSING DOCUMENTATION FORMS**

The following forms are used by the LIBRARIAN PROCESSING DOCUMENTATION.

Please use one of these forms that is in e-mail (unless you do not have access to e-mail). The forms are found in this order.

DOADC-138 LIBRARIAN ACCESS
DOADC-144 LIBRARIAN REASSIGN

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DOADC-138 DRM Librarian Access Request Instructions			
Date Submitted: (1)			
Implementation Date: (2) (5 work days lead time required)			
Requested By: (3)		Phone: (4)	
Authorized By (5)		Phone: (6)	
User	Librarian	Manager	Pgmmr
TSO id	Application	TSO id	-or- Mgr (P/M)
(7)	(8)	(9)	(10)

Librarian Access Request Instructions

- (1) Date Submitted - Date the request was submitted to the Librarian Administrator.
- (2) Implementation Date – The desired date for the changes to be implemented.
- (3) Requested By – Name of the individual requesting access.
- (4) Phone – Phone number of the requester.
- (5) Authorized By – The individual who is authorized to approve the access request.
- (6) Phone – Phone number of the person authorizing the request.
- (7) User TSO id – TSO id that requires access.
- (8) Librarian Application – Name of the Librarian application for which access is desired.
- (9) Manager TSO id – TSO id for the manager that is responsible for the application.
- (10) Pgmmr -or- Mgr – Identify user id as Programmer or Manager.

P=Programmer
M=Manager

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<p style="text-align: center;">DOADC-144 LIBRARIAN REASSIGN REQUEST</p> <p>Date Submitted:</p> <p>Implementation Date: (5 work days lead time required)</p> <p>Requested By: Phone:</p> <p>Authorized By: Phone:</p> <p>Work Order Number to be Reassigned:</p> <p>Current Programmer or Manager id:</p> <p>Programmer or Manager to be assigned:</p> <p style="text-align: center;">Note: This request MUST come from the manager who is receiving the assignment or it will not be valid.</p>

2.3. References

2.4. Attachments